

## PERSONALITY PATHOLOGY IN PREGNANT WOMEN

### **Impact of Level of Personality Pathology on Affective, Behavioral, and Thought Problems in Pregnant Women during the Coronavirus Disease 2019 Pandemic**

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**Abstract**

Among at-risk groups for psychological distress in the context of the Coronavirus Disease 2019 (COVID-19) pandemic, pregnant women might be especially vulnerable. Identifying subgroups of pregnant women at high risk of poor adaptation might optimize clinical screening and intervention, which could in turn contribute to mitigating the potentially devastating effects of prenatal stress on mothers and fetus. Level of personality functioning may be a good indicator of who may be more vulnerable of experiencing distress in challenging periods like the COVID-19 pandemic since adults with high levels of personality dysfunction may experience significant difficulties in mentalizing threatening situations. The aims of the present study are (a) to determine the impact of level of personality pathology on affective, behavioral, and thought problems in pregnant women during the COVID-19 pandemic; and (b) to test a model where mentalization of trauma mediates the impact of personality pathology on symptomatology. Data from 1207 French-Canadian pregnant women recruited through social media during the COVID-19 pandemic were analyzed. Latent Profile Analysis, using the Criterion A elements of the DSM-5 Alternative Model for Personality Disorders (Identity, Self-direction, Empathy, Intimacy) as latent indicators, yielded four profiles: Healthy, Mild Self impairment, Intimacy impairment, and Personality disorder. Profiles showed significant associations with diverse indicators of symptomatology. Mediation models showed both direct and indirect (through mentalization of trauma) significant associations between level of personality functioning and affective/behavioral/thought problems. Results have clinical implications on prophylactic measures for at-risk pregnant women, especially in challenging contexts such as the COVID-19 pandemic.

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**Keywords:** level of personality functioning; DSM-5 Alternative Model for Personality Disorders; mentalization; pregnancy; COVID-19

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### **Impact of Level of Personality Pathology on Affective, Behavioral, and Thought Problems in Pregnant Women during the Coronavirus Disease 2019 Pandemic**

The Coronavirus Disease 2019 (COVID-19) pandemic is undoubtedly a trying and challenging time. Direct and indirect consequences of the virus, and of the social and economic disruptions it caused, are countless, to the point where it has already been dubbed by some “the loss and trauma event of our time” (Miller, 2020). Research data has already documented the adverse impact of the virus and its associated disruptions on mental health in various at-risk groups (e.g., health care workers, ethnic minorities, LGBTQ populations; Novacek et al., 2020; Ruiz & Gibson, 2020; Salerno et al., 2020).

Pregnant women represent another at-risk group for mental health problems in the context of the COVID-19 pandemic. In addition to legitimate health concerns, disruption in prenatal care add to the burden of expecting women at a time which is inherently challenging (e.g., Buekens et al., 2020). An upward trend in distress and psychiatric symptoms has been documented in pregnant women during the pandemic (Berthelot et al., 2020; Davenport et al., 2020; Wu, Zheng, et al., 2020); expecting mothers with a history of psychiatric disorder or low income might be especially at risk (Berthelot et al., 2020). Given the well-documented impact of prenatal maternal stress on physical (including brain development) and psychological development in their offspring (e.g., Meaney, 2018; Wu, Lu, et al., 2020), identification and clinical monitoring of “high-risk mothers” appear warranted. What constitutes a “high risk”, however, is disputed, as previous research has demonstrated that prenatal distress is frequent in privileged community samples and exerts detrimental effects on mothers and their offspring even in mothers with no vulnerability factors such as complications of pregnancy or adverse socioeconomic conditions (Dean et al., 2018; Wu, Lu, et al., 2020).

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An under-researched possibility is that above and beyond those manifest features of expecting mothers and pregnancies, level of personality functioning might be a key factor in identifying vulnerable pregnant women. Indeed, pregnant women with borderline features have already been identified as a high-risk group likely to experience emotional regulation and mentalization difficulties with aspects of parenting, resulting in a myriad of neurodevelopmental, psychological, relational, and behavioral consequences in the offspring (e.g., Blankley et al., 2015; Newman-Morris et al., 2020). Studying the level of personality functioning may also provide indications for gradated levels of monitoring and care, based on the level of personality dysfunction. An operationalization of level of personality functioning was introduced in Section III of the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; American Psychiatric Association, 2013) as a component of the Alternative Model for Personality Disorders (AMPD). Criterion A from the AMPD was introduced as a continuum of personality functioning including five severity anchor points, based on four elements believed to be closely interrelated: Identity and Self-direction (which form a Self dimension), and Empathy and Intimacy (which form an Interpersonal dimension; Bender et al., 2011).

While Criterion A is still under-researched (Zimmermann et al., 2019), several of its recent operationalizations have generated promising results (see Waugh et al., 2020, for a review of Criterion A self-report measures). Level of personality functioning has been associated with numerous indicators of psychological distress and symptoms of internalized and externalized psychopathology, including symptoms of distress, health issues, and interpersonal problems (see Zimmermann et al., 2019, for a review). The independent value of Criterion A elements has been disputed (e.g., Morey, 2019), as some PD scholars have advocated that Criterion A should be conceptualized as a single core dimension, based on the idea that the four elements which

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underlie Self and Interpersonal dimensions are strongly related and mutually interwoven (e.g., the Interpersonal dimension is thought to describe representations of self-in-relation-to-others; Buer Christensen et al., 2020). However, based on factor-analytic research (e.g., Gamache et al., 2019; Siefert et al., 2020; Sleep et al., 2019), specific associations of Criterion A elements with different types of dysfunction and psychosocial functioning (e.g., Buer Christensen et al., 2020; Gamache et al., 2019; Siefert et al., 2020), and distinct daily patterns of oscillations in personality impairment (Roche et al., 2016), the unitary nature of Criterion A has been called into question, and the independent value of Criterion A elements has been consistently demonstrated. In the current state of research, both propositions have merits, and do not appear to be mutually exclusive. Criterion A elements and dimensions might be closely intertwined and have dynamic inter-influences, while also having specific associations and predictive power with numerous variables relevant for clinical monitoring and treatment planning.

People with personality dysfunctions generally display impairments in different facets of mentalization (or reflective function; Fonagy & Luyten, 2009). These impairments in the ability to perceive and interpret human behaviors in terms of intentional mental states (Fonagy & Target, 1997) may largely contribute to the affective dysregulation and behavioral problems frequently observed in adults with personality disorder when they are confronted to stressful or threatening situations (e.g., Fonagy & Luyten, 2009). As recent investigations have uncovered the importance of focusing on specific dimensions of reflective function when examining the association between mentalization and outcomes (Borelli et al., in press; Smaling et al., 2016), the ability (or lack thereof) to mentalize specifically regarding trauma and adversity (or trauma-specific reflective functioning) may be particularly predictive of the level of adaptation in the context of a distressing event such as the COVID-19 pandemic. Indeed, recent evidence showed

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that, in pregnant women, good mentalization abilities in relation to traumatic events were associated with lower levels of maternal psychological distress (Berthelot et al., 2020), more so than general mentalization abilities. The recent development and validation of the Trauma-Specific Reflective Functioning Scale (RFQ-T; Berthelot et al., 2020), a 29-item self-report questionnaire measuring different types of impairments in the mentalization of trauma and adverse interpersonal events, allows for larger-scale assessment of this variable (in contrast with, e.g., codification of Adult Attachment Interview protocols).

### **The Present Study**

The present investigation follows two main objectives. First, we wish to identify profiles of pregnant women who might be especially vulnerable to a wide range of mental health issues during the COVID-19 pandemic, with the assumption that different levels of personality functioning might entail different levels of vulnerability. To do so, a Latent Profile Analysis will be conducted, using the four Criterion A elements as latent indicators. This approach has the additional benefit of providing an opportunity to further explore the unresolved issue of the utility of Criterion A elements as independent indicators of personality pathology. Profiles will then be contrasted using a wide array of outcome variables pertaining to internalized pathology (depression-anxiety, post-traumatic symptomatology, negative affectivity), externalized aggression (domestic violence perpetration), and thought disorders (dissociation), based on the hypothesis that profiles with a more severe level of personality pathology will be characterized by higher levels of symptomatology during the COVID-19 pandemic. A second objective is to further explore the association between level of personality functioning and negative outcome by testing a mediation model, including mentalization of trauma as a mediator. This will allow to test whether the capacity to reflect coherently on complex and confusing traumatic or adverse



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experiences might represent a mechanism through which the level of personality functioning exerts an impact, for expecting mothers, on manifestations of internalized/externalized pathology and thought disorders during a period of crisis such as the COVID-19 pandemic.

### Method

#### Participants and Procedure

A total sample of 1207 French-speaking Canadian expecting women ( $M_{age} = 29.6$ ,  $SD = 4.0$ , range 19-46) was recruited during the COVID-19 pandemic from April 2 to April 13 2020 through advertisement on social media (Facebook and Instagram). At that time, a public health emergency had been declared by the Province of Quebec government in response to COVID-19 since March 13 2020; there was a full shutdown of all nonessential activities and a stay-at-home order was in effect. All adult pregnant women with sufficient reading skills to complete self-report instruments were included in the present sample. Measures were completed online on a secure portal. All participants gave informed consent, and 60 incentives of \$25 CDN were drawn among responders. This study was duly authorized by ethics committee from the Université du Québec at Trois-Rivières.

At the time of the assessment, 46.0% of the participants worked full-time or part-time, 30.9% were on preventive leave, 19.3% were unemployed (i.e., 11.2% had lost their position because of the COVID-related shutdown while 8.1% were unemployed before and saw no change in their status), and 3.4% were students. Almost all women were in a relationship (98.8%) and cohabiting with their partner (98.9%). A very large majority were of Caucasian-white ethnicity (97.3%). Most women from the sample were primiparous (59.6%), and women were on average at their 24th week of pregnancy ( $M = 24.3$ ,  $Mdn = 25$ ,  $Mo = 27$ , range 4-41); 15.2% had a pregnancy deemed at risk by their treating doctor. Regarding the COVID-19

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situation, most women mentioned that their financial situation was negatively impacted by the pandemic (“somewhat impacted” for 40.8%, “severely impacted” for 14.2%, and unchanged for 45.0%). Most mentioned that they felt more anxious than before the pandemic (78.9%), while the others felt that their anxiety was lessened (3.8%) or unchanged (17.3%).

### **Measures**

Along with a detailed sociodemographic questionnaire, participants were invited to complete all following questionnaires in their validated French versions.

#### *Latent Profile Analysis Indicators*

**Self and Interpersonal Functioning Scale.** The Self and Interpersonal Functioning Scale (SIFS; Gamache et al., 2019) is a 24-item measure of the AMPD Criterion A. Items are rated on a five-point Likert scale (higher scores indicate higher dysfunction). It provides a global personality dysfunction score ( $\alpha = .86$ ) and four subscale scores: Identity (seven items;  $\alpha = .73$ ), Self-direction (five items;  $\alpha = .61$ ), Empathy (six items;  $\alpha = .65$ ), and Intimacy (six items;  $\alpha = .69$ ). Previous research on the SIFS using Confirmatory Factor Analysis yielded a second-order model, with four elements organized in a higher-order personality dysfunction factor (Gamache et al., 2019). Nomological networks of the four SIFS elements showed well-delineated associations with meaningful personality constructs, also supporting their independent value. Content validity analysis of the SIFS items also showed promising results, on par with other Criterion A measures, in an independent study (Waugh et al., 2020).

#### *Affective, Behavioral, and Thought Problems*

**Kessler Psychological Distress Scale.** Anxious and depressive symptomatology were assessed using the 10-item Kessler Psychological Distress Scale (K-10; Gravel et al., n.d.;

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Kessler et al., 2002). Items are rated on a five-point scale. The total score was used in the present study ( $\alpha = .81$ ).

**Positive and Negative Affect Schedule.** Experience of positive and negative affectivity was assessed using the 20-item Positive and Negative Affect Schedule (PANAS; Gaudreau et al., 2006; Watson et al., 1988). The Positive Affect scale ( $\alpha = .82$ ) covers the experience of feelings such as energy, enthusiasm, and inspiration, while its negative counterpart ( $\alpha = .81$ ) covers experiences such as fear, hostility, and shame ( $\alpha = .88$ ). Both scales include 10 items scored on a five-point scale.

**Edinburgh Perinatal/Postnatal Depression Scale.** The Edinburgh Perinatal/Postnatal Depression Scale (EPDS; Adouard et al., 2005; Cox et al., 1987) was developed to indicate the presence of depressive symptoms during pregnancy and in the year following childbirth. It includes 10 items scored on a four-point scale, and provides a total score which was used in the present study ( $\alpha = .85$ ).

**Posttraumatic Stress Disorder (PTSD) Checklist for DSM-5.** Trauma-related symptoms were assessed using the PTSD Checklist for DSM-5 (PCL-5; Ashbaugh et al., 2016; Wilkins et al., 2011). This 20-item self-report is aligned with the PTSD diagnostic criteria of the DSM-5, and yields a total score ( $\alpha = .92$ ). Responses are rated on a five-point Likert scale.

**Domestic Violence Perpetration.** A subset of 12 items from the Revised Conflict Tactics Scale (CTS-2; Lussier, 1997; Straus et al., 1996) was used to assess domestic violence (psychological and physical) perpetration (DVP). The two subscales include six items rated on a seven-point Likert scale indicating frequency of interpersonal violence since the beginning of pregnancy. A composite mean score of perpetration (for combined psychological/physical violence;  $\alpha = .68$ ) was used in the present study.

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**Dissociative Experiences Scale.** Dissociative symptoms were assessed using the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986; Larøi et al., 2013). Two dimensions of the dissociative experience were assessed in the present study: Absorption/Imaginative involvement (nine items;  $\alpha = .83$ ) and Depersonalization/Derealization (six items;  $\alpha = .76$ ); Cronbach alpha for the total scale was .88. Participants were instructed to indicate the extent to which each statement reflects their experience, on an 11-point rating scale ranging from 0% to 100%.

**COVID-Related Experience Questionnaire–Pregnancy version.** The COVID-Related Experience Questionnaire–Pregnancy version (CREQ-P; Berthelot, Lemieux, Drouin-Maziade, & Garon-Bissonnette, 2020) was developed for the purpose of the present study. It includes 14 straightforward questions pertaining to COVID-related distress specifically in the context of pregnancy or childbirth (e.g., “I fear being infected with COVID-19 in the context of pregnancy-related care and services”, “I am anxious that my child will get COVID-19”). Participants were instructed to rate each item on a four-point rating scale ranging from “Never” to “Always”, yielding a total score ( $\alpha = .87$ ).

### *Mediation Model Variable*

**Trauma-Specific Reflective Functioning Questionnaire.** The Trauma-Specific Reflective Functioning Questionnaire (RFQ-T; Berthelot et al., 2020), originally developed in French, was used to assess how people think about or deal with past trauma and adverse experiences. It includes 29 items scored on a five-point Likert scale. Participants were asked to rate items after thinking of a difficult life experience in which they felt strong negative emotions (e.g., abandonment, betrayal, fear). Exploratory and Confirmatory Factor Analysis yielded seven

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factors, loading on a general factor of mentalization of trauma. The RFQ-T global score, which is obtained by adding the mean score of all seven subscales, was used in the present study ( $\alpha = .90$ ).

### **Statistical Analyses**

A Latent Profile Analysis (LPA) was performed to determine the presence of distinct profiles of personality functioning using Mplus version 8.4 (L. K. Muthén & B. O. Muthén, 2017). Latent profiles were evaluated using the four SIFS elements (Identity, Self-direction, Empathy, and Intimacy) as parameters, after data standardization. Latent models for six different class solutions were evaluated. Optimal class solution was determined based on multiple quantitative indicators of model fit: Akaike (AIC) and Bayesian (BIC) Information Criterion, Sample-Size Adjusted-BIC (SABIC), and Lo-Mendell-Rubin Adjusted Likelihood Ratio Test (LMRT). Lower values on the AIC, BIC, and SABIC are indicative of a better-fitting model, while a significant difference on the LMRT between class solutions (i.e.,  $k$  vs.  $k - 1$ ) suggests that  $k$  class solution is a superior fit than the  $k - 1$  class solution (Nylund et al., 2007). Model entropy was also evaluated to determine accuracy of classification; a score between .8 and 1 is indicative of adequate classification precision. Interpretability of the solution was also considered in the final selection. Latent profiles were then compared on distress and symptomatology variables, with Kruskal-Wallis tests (for nonparametric data) using the Statistical Package for the Social Sciences (SPSS) 26.0 software. Bivariate Pearson correlations between the aforementioned variables were also calculated.

The hypothesized mediation effect of mentalization of trauma between level of personality pathology and symptomatology was tested using the PROCESS macros created by Hayes (2018) for SPSS. While PROCESS provides ordinary least squares regression-based path analysis similar to structural equation modeling, it also offers additional useful statistics (e.g.,

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bias-corrected bootstrap confidence intervals) and safeguards against irregular sampling distributions (Hayes et al., 2017). The hypothesized mediation model (Figure 1) was tested using three outcome variables: affective, behavioral, and thought problems. To reduce the number of mediation models to be tested, variables indicative of internalized pathology were entered into a Principal Components Analysis (PCA), which aimed at creating a factor score to be used in the mediation model. Items from scales indicative of anxiety-depression (K-10, EPDS), negative affectivity (PANAS Negative affect) and post-traumatic symptomatology (PCL-5) were selected. These variables were expected to show high inter-correlations, as they are all hypothesized to be underpinned by a similar underlying dimension, e.g., the Internalizing spectra from the Hierarchical Taxonomy of Psychopathology (HiTOP; Kotov et al., 2017). All variables were treated as continuous. Bootstrap confidence intervals were used to determine the significance of indirect effects, in line with Hayes' recommendations (2018).

## Results

### Latent Profile Analysis

Bivariate Pearson correlations between latent indicator variables (corresponding to the four SIFS elements) and measures of affective/behavioral/thought problems revealed figures in the moderate range for the most part (see Table 1; see also Supplemental Table 1 for inter-correlations between symptomatology and mentalization of trauma variables). In contrast with other SIFS elements, Identity showed higher correlations with indices of depression and post-traumatic stress (K-10, EPDS, PCL-5). Inter-correlations between SIFS elements were moderate to high (range = .42 to .56), showing no sign of collinearity.

The six tested profile solutions are displayed in Table 2. Across the six different solutions, the four-profile solution appeared to be the best fitting model with the current sample.

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Given that AIC, BIC, and SABIC values decreased across all six profile solutions, and that no entropy figure clearly stood out (all figures were borderline of the lower-bound of .80 for classification adequacy), LMRT results and interpretability were the decisive factors in determining the best profile solution. The four-profile solution fit significantly better than the three-profile solution, while the five-profile solution did not fit significantly better than the four-profile solution.

The four profiles were labeled Healthy, Mild Self impairment, Intimacy impairment, and Personality disorder (see Figure 2). Classification probabilities for the most likely latent class membership by latent class were respectively .78, .94, .80, and .91. Participants from the Healthy profile ( $n = 642$ ; 53.2% of the sample) showed low scores ( $z$ -score range = -0.59 to -0.52) on all four SIFS elements. The Mild Self impairment profile ( $n = 274$ ; 22.7%) was characterized by mild elevations on the Identity and Self-direction elements ( $z$ -scores respectively 0.63 and 0.71). The Intimacy impairment profile ( $n = 153$ ; 12.7%) showed a high score for the SIFS Intimacy element ( $z$ -score = 1.10) indicative of dysfunction in that area, while scores for all three other elements were in the average range. Finally, the Personality disorder profile ( $n = 138$ ; 11.4%) showed marked elevations on all four SIFS elements ( $z$ -score range = 1.35 to 1.80). According to DSM-5 AMPD guidelines for Criterion A (i.e., presence of two or more elements; APA; 2013) and SIFS proposed clinical cutoff scores for the four elements (Gamache et al., 2019), no women from the Healthy profile had a pathological level of personality pathology, while the proportions of women from the three other profiles in the pathological range were as follows: Mild Self impairment:  $n = 29$  (11.5%); Intimacy impairment:  $n = 8$  (5.2%); and Personality disorder:  $n = 109$  (79.0%).

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Table 3 shows how the four profiles differ from each other on symptomatology measures. As all variables showed nonparametric distributions based on quantitative (e.g., Kolmogorov-Smirnov, Shapiro-Wilk) and visual indices, Kruskal-Wallis tests with two-tailed post-hoc comparisons using Bonferroni's correction for multiple contrasts were used to determine the presence of significant differences between profiles on all variables of interest. The Healthy profile showed better functioning and less symptomatology in contrast with all three other profiles. Overall, the Intimacy impairment profile showed a slightly better functioning and less symptomatology in contrast with the Mild Self impairment profile, according to most indicators (K-10, PANAS Negative affect, EPDS, CTS-2 domestic violence perpetration, DES Absorption/Imaginative involvement). The Personality disorder profile had the highest figures on all indices of symptomatology, with significant differences with the Mild Self impairment and the Intimacy impairment profiles on most measures.

### **Mediation Models**

The four potential indicators of Internalizing pathology (K-10, PANAS Negative affect, EPDS, PCL-5) showed high inter-correlations, as expected ( $r$  range: .56 to .69; see Supplemental Table 1), and thus were entered into a PCA which yielded a strong first component (eigenvalue = 15.58, ratio to second component = 4.84, 33.15% of explained variance); its corresponding factor score was used as the outcome variable in the first mediation model. Two other separate mediation models were computed for externalized aggression (DVP) and thought disorder (total score of the DES), also in line with the HiTOP conceptualization – although the placement of dissociative experiences into the Thought disorder spectra remains provisional at this time according to HiTOP current state of research (Kotov et al., 2020).



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Table 4 displays mediation results, based on the hypothesized model (see Figure 1). Central to the mediation hypothesis, the effect of level of personality pathology (SIFS total score; *a* path) on mentalization of trauma (RFQ-T total score) was significant ( $p < .0001$ ), as was the effect of mentalization of trauma on all three outcome variables (*b* path). Level of personality functioning had a significant direct effect on all three outcome variables (*c'* path) in theoretically expected ways. These associations remained significant for the Total effects model (*c* path), which included the tested mediator (RFQ-T). The bootstrap results with 5000 re-samples showed, for all three outcome variables, 95% confidence intervals not containing zero, which are indicative of significant indirect (mediation) effects.

### Discussion

The present study focused on pregnant women, a population with a documented high risk of mental health issues during the COVID-19 pandemic, and aimed at identifying profiles with increased vulnerability to affective, behavioral, and thought problems. More specifically, we examined how different levels and profiles of personality functioning might affect a wide range of mental health symptoms (internalized pathology, domestic violence perpetration, dissociative experiences). We also explored whether inefficient mentalization of trauma, i.e. difficulties in processing cognitively and affectively traumatic experiences or adverse relationships, would mediate the relationship between level of personality functioning and symptomatology.

Latent Profile Analysis yielded four profiles of personality functioning based on Criterion A elements from the DSM-5 Alternative Model for Personality Disorders. One profile, which was also the largest (53.2%), included healthy women with no indices of personality dysfunction or symptoms; another (11.4%) showed marked levels of dysfunction according to all measures, and presumably corresponds to a “personality disorder” profile. In between, two other profiles

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were characterized by mild personality pathology: one with mild elevations on the Identity and Self-direction elements, the other with elevation on the Intimacy element. Both profiles showed significantly more symptomatology in contrast with the Healthy profile. The Mild Self impairment profile appeared to show more indices of distress and dysfunction according to multiple measures of symptomatology in contrast with the Intimacy impairment profile. It remains unclear whether it really reflects more pathology in the former, or whether it ensues from an over-representation of measures of internalized pathology in our testing battery – as the Identity element, notably, has been shown elsewhere to be closely tied with negative affectivity (e.g., Gamache et al., 2019; McCabe et al., 2020; see Widiger et al., 2019 for a discussion). The lower levels of affective, behavioral, and thought problems in the Intimacy impairment profile, in contrast with the two other groups where personality pathology was present, raise the intriguing possibility that intimacy pathology might procure a form of “protection” to fend off some impacts of social distancing. Indeed, given that elevations in the Intimacy element have shown close associations with detachment in previous research (Gamache et al., 2019; see also Widiger et al., 2019, for a discussion), it is possible that women with avoidant proclivities might be better “equipped” to deal with the psychological strain one might expect as a result of reduced interpersonal contacts. This hypothesized “protection”, however, is nuanced by the aforementioned observation that women from the Intimacy impairment profile, for most indicators, reported more dysfunction in contrast with the Healthy profile.

Results suggest that even slight elevations in the level of personality pathology could translate into increased distress and dysfunction, even at levels that might not indicate the presence of a personality disorder; indeed, the vast majority of women from the Mild Self impairment and Intimacy impairment profiles (88.5% and 94.8%, respectively) did not have

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personality pathology *stricto sensu* according to DSM-5 AMPD guidelines and SIFS clinical cutoff scores. This suggests that the SIFS operationalization of Criterion A could be a sensitive tool to detect variations of level of personality functioning of clinical relevance and thus to identify individuals requiring further clinical monitoring. Also of note, women from the Mild Self impairment and Intimacy impairment profiles were highly unlikely to be classified as healthy (probability of 1.2% and 4.6% respectively) or disordered (probability of 0.0% and 1.4% respectively) by the model, which suggests good delineation between profiles and mitigates potential concerns about the borderline entropy figure (.79) obtained for the retained latent class solution. The qualitative differences between the profiles support the independent value of Criterion A elements, which was previously highlighted in research based on various designs (e.g., Buer Christensen et al., 2020; Gamache et al., 2019; Roche et al., 2016; Siefert et al., 2020; Sleep et al., 2019). In the present study, a more straightforward approach to classification (e.g., using predetermined levels of standard deviation units based on the total SIFS scores to form “profiles”) would have blurred, notably, relevant qualitative differences between the Mild Self impairment and the Intimacy impairment profiles.

Level of personality functioning exerted both a direct and an indirect effect (through mentalization of trauma) on internalized pathology, domestic violence perpetration, and dissociation. Results from the mediation analyses are promising in showing that the ability, or lack thereof, to reflect coherently on traumatic experiences might represent a pathway through which personality pathology impacts overt symptomatology. This result adds to a burgeoning literature highlighting the impact of mentalization of trauma on the psychological functioning of mothers and their offspring, in line with previous studies that documented its capacity to predict positive investment in pregnancy and couple functioning (Ensink et al., 2014), infant attachment

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disorganization at 18-months postpartum (Berthelot et al., 2015), as well as its potential “buffer” effect to prevent the intergenerational continuity of childhood trauma in offspring of mothers with an history of sexual abuse (Borelli et al., 2019). It also clarifies to some extent previous mixed results on the association between borderline features and mentalization in the prediction of distorted maternal representations and the quality of mother-infant interaction (Newman-Morris et al., 2020). In adults with personality dysfunctions, mentalization of trauma may be a better predictor of mother psychological functioning, mother-infant interaction, and maternal representations than more general reflective functioning.

The COVID-19 pandemic has triggered intense negative emotions, such as anxiety, helplessness, isolation or disenchantment, in many adults, and particularly in vulnerable groups such as pregnant women (e.g., Berthelot et al., 2020; Davenport et al., 2020; Wu, Zheng, et al., 2020). Our results suggest that pregnant women with personality dysfunctions were particularly likely to present inefficient processing of these negative emotions, impairing their ability to efficiently regulate affects and increasing in turn the risk of presenting significant affective symptoms, violent behaviors, and thought problems. Whether the present results are specific to the actual context of the COVID-19 pandemic and its associated disruptions (which might entail trauma, both personal and interpersonal in nature – e.g., job loss, estrangement from family and friends, uncertainty regarding personal and infant’s future health, disruption in prenatal care, etc.), or whether they are context-independent and apply in general to the association between the variables tested in our model, warrants further replication.

The main limitation of the present study is that data were collected at a single point in time. It entails that (a) we did not have access to pre-COVID data from the participants, precluding analyses of how mental health in women from the sample might have changed as a

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result of the pandemic, and (b) all findings are correlational in nature, and cannot be considered as predictive or causal *stricto sensu* (but see Hayes, 2018, for a counterargument regarding mediation models). Furthermore, data were collected exclusively through self-report questionnaires; while recent reports support the validity and usefulness of self-report assessment of personality pathology (Stanton et al., 2019), a mono-method of assessment might have led to an artificial inflation of inter-relations between variables due to shared method (Podsakoff et al., 2012). We did not have access to some potentially meaningful background information about the participants, including the presence of a proper PD diagnosis, or changes to the working environment (e.g., switching to telework), both of which could have impacted on how they processed the difficulties of the COVID pandemic. Finally, replication studies will be of the utmost importance, as the present research design does not allow to draw definitive conclusions regarding the specificity versus the generalizability of the results (e.g., are the latent profiles and mediation results specific to pregnant women, to various at-risk groups, or are they more general? Are the present results specific to the COVID-19 pandemic, to other major crises, or do they have broader applications?). Replication studies should also include more diverse samples, as ours was quite homogeneous in terms of ethnicity and socio-professional profile.

Despite those limitations, the study also has notable strengths, which include the use of a large sample, a wide coverage of dysfunction variables, and a suitable variability of level of personality functioning in the sample. The present results have important implications for public health care policies, as it confirms previous results (e.g., Davenport et al., 2020; Wu, Zheng, et al., 2020) showing that pregnant women are a group at risk for mental health issues during the COVID-19 pandemic; indeed, close to half of the women in our sample (46.8%) belonged to profiles entailing at least some risk for psychological distress, domestic violence perpetration,

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and dissociation. The present study, which resolutely fits into the flourishing dimensional perspective on personality and general psychopathology (e.g., AMPD, HiTOP), also has significant theoretical implications regarding these models. Notably, it sheds some light on the ongoing debate regarding the optimal conceptualization of Criterion A from the AMPD, showing once again the independent value of the four elements to establish clinically-relevant profiles, which might prove useful for clinical monitoring and eventual treatment planning. Results suggest that the administration of the SIFS in periods of high stress could contribute to screen rapidly and efficiently for pregnant women who are the more at risk to present affective, behavioral and/or thought problems and would require further monitoring. Furthermore, to our knowledge, results are the first to highlight the potential role of mentalization of trauma as a mechanism through which personality pathology might exert its effect on psychological distress and dysfunction. This offers a potential target for psychosocial interventions delivered during pregnancy to the most at-risk women in order to mitigate the impact of the pandemic on psychological distress and its potential repercussions on their offspring.

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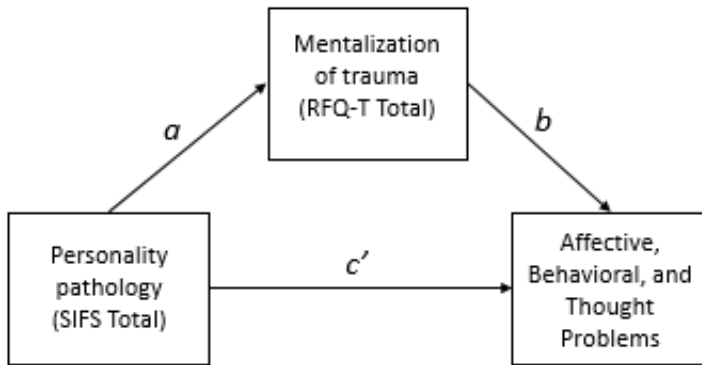
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**Figure 1***Hypothesized Mediation Model*

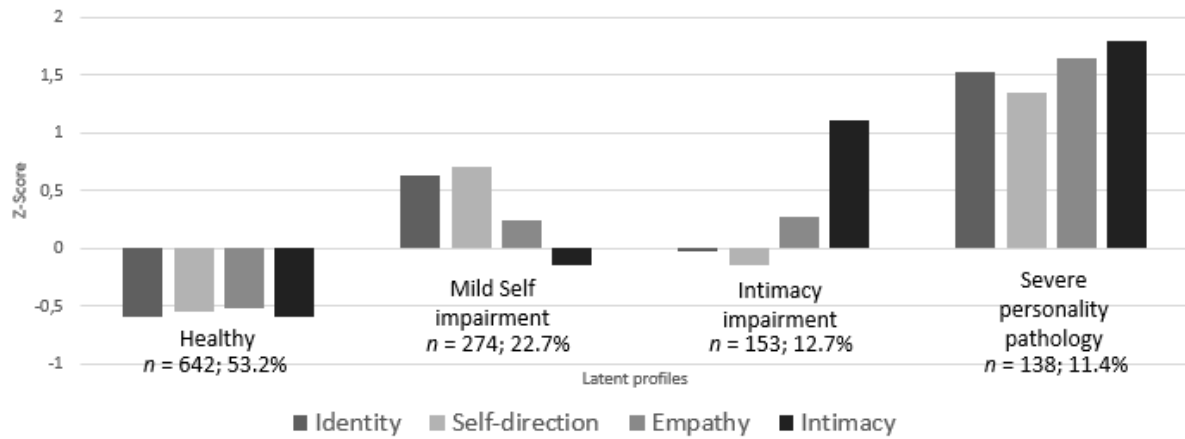
*Note.* SIFS = Self and Interpersonal Functioning Scale. RFQ-T = Trauma-Specific Reflective Functioning Scale.  $a$  = Effect of Personality pathology on Mentalization of trauma.  $b$  = Effect of Mentalization of trauma on Affective, behavioral, and thought problems.  $c'$  = Direct effect of Personality pathology on Affective, behavioral, and thought problems.



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**Figure 2**

*Latent Profile Description using the Four Latent Indicators from the Self and Interpersonal Functioning Scale*



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**Table 1***Bivariate Pearson Correlations between the Self and Interpersonal Functioning Scale (SIFS)**Elements and Affective, Behavioral, and Thought Problems, and Mentalization of Trauma*

	SIFS Identity	SIFS Self- direction	SIFS Empathy	SIFS Intimacy	SIFS Total
SIFS Identity		.55	.47	.48	.83
SIFS Self-direction			.45	.42	.76
SIFS Empathy				.56	.78
SIFS Intimacy					.77
K-10	.48	.32	.27	.27	.44
PANAS +	-.18	-.15	-.15	-.15	-.20
PANAS -	.43	.27	.27	.24	.40
EPDS	.52	.35	.28	.30	.47
PCL-5	.52	.34	.33	.35	.50
CTS-2 DVP	.22	.24	.29	.22	.32
DES Absorp.	.41	.40	.36	.30	.48
DES Depers.	.35	.26	.24	.25	.36
CREQ-P	.33	.25	.16	.19	.30
RFQ-T	.50	.41	.47	.48	.59

*Note.* SIFS = Self and Interpersonal Functioning Scale. K-10 = Kessler Psychological Distress Scale. PANAS + = Positive and Negative Affect Schedule Positive Affect scale. PANAS - = Positive and Negative Affect Schedule Negative Affect scale. EPDS = Edinburgh

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Perinatal/Postnatal Depression Scale. PCL-5 = Posttraumatic Stress Disorder Checklist for DSM-5. CTS-2 DVP = Revised Conflict Tactics Scale total domestic violence (psychological and physical) perpetration. DES Absorp. = Dissociative Experiences Scale Absorption/Imaginative involvement. DES Depers. = Dissociative Experiences Scale Depersonalization/Derealization. CREQ-P = COVID-Related Experience Questionnaire–Pregnancy version. RFQ-T = Trauma-Specific Reflective Functioning Scale. For all measures except PANAS Positive Affect, higher scores denote higher dysfunction. All  $ps < .001$ .

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**Table 2**

*Latent Profile Analysis for Class Solutions 1 through 6 using the Four Self and Interpersonal Functioning Scale Elements as Latent Indicators*

Classes (k)	LMRT	AIC	BIC	Sample-Size	Entropy
				Adjusted BIC	
1	---	12576.624	12626.046	12594.285	---
2	1158.648**	11486.088	11565.162	11514.344	.77
3	247.118**	11134.127	11242.854	11172.980	.76
4	197.133*	10948.935	11087.316	10998.384	.79
5	57.738	10742.736	10910.769	10802.781	.81
6	50.144	10678.682	10876.369	10749.324	.79

*Note.* LMRT = Lo-Mendell-Rubin Adjusted Likelihood Ratio Test. AIC = Akaike Information Criteria. BIC = Bayesian Information Criteria.

\*  $p < .001$ . \*\*  $p < .0001$ .

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**Table 3***Comparisons between Latent Profiles on Affective, Behavioral, and Thought Problems, and Mentalization of Trauma*

Exogenous variables		Profile 1: Healthy ( <i>n</i> = 642)	Profile 2: Mild Self impairment ( <i>n</i> = 274)	Profile 3: Intimacy impairment ( <i>n</i> = 153)	Profile 4: Personality disorder ( <i>n</i> = 138)	Post-hoc comparisons (two-tailed, using Bonferroni's correction for multiple comparisons) following a significant Kruskal-Wallis test
K-10	<i>M</i>	19.15	23.54	20.99	26.78	1 < 2***, 3**, 4***
	<i>SD</i>	6.27	6.03	6.84	6.00	2 > 3**, < 4*** 3 < 4***
PANAS + <sup>a</sup>	<i>M</i>	28.78	26.42	26.86	26.21	1 > 2***, 3**, 4***
	<i>SD</i>	6.23	5.87	5.75	6.12	
PANAS –	<i>M</i>	20.96	25.05	23.16	27.67	1 < 2***, 3**, 4***
	<i>SD</i>	6.35	7.05	7.10	7.23	2 > 3*, < 4** 3 < 4***
EPDS	<i>M</i>	17.42	21.00	19.57	23.24	1 < 2***, 3***, 4***
	<i>SD</i>	4.30	4.84	5.16	5.01	2 > 3*, < 4** 3 < 4***
PCL-5	<i>M</i>	9.60	17.24	15.74	25.13	1 < 2***, 3***, 4***
	<i>SD</i>	8.66	12.37	13.16	13.88	2 < 4*** 3 < 4***
CTS-2 DVP	<i>M</i>	1.76	3.55	2.64	5.74	1 < 2***, 4***
	<i>SD</i>	2.80	3.93	3.73	6.94	2 > 3* 3 < 4***
DES Absorp.	<i>M</i>	10.81	19.14	14.35	28.40	1 < 2***, 3**, 4***
	<i>SD</i>	9.73	13.87	11.91	16.92	2 > 3**, < 4***

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						3 < 4***
DES Depers.	<i>M</i>	1.88	4.91	4.46	10.15	1 < 2***, 3***, 4***
	<i>SD</i>	4.93	8.29	7.75	13.78	2 < 4**
						3 < 4**
CREQ-P	<i>M</i>	17.92	21.14	19.32	23.52	1 < 2***, 4***
	<i>SD</i>	7.42	7.70	7.98	7.84	3 < 4***
RFQ-T	<i>M</i>	3.43	5.79	5.90	8.88	1 < 2***, 3***, 4***
	<i>SD</i>	2.48	2.84	3.04	3.39	2 < 4***
						3 < 4***

*Note.* K-10 = Kessler Psychological Distress Scale. PANAS + = Positive and Negative Affect Schedule Positive Affect scale. PANAS - = Positive and Negative Affect Schedule Negative Affect scale. EPDS = Edinburgh Perinatal/Postnatal Depression Scale. PCL-5 = Posttraumatic Stress Disorder Checklist for DSM-5. CTS-2 DVP = Revised Conflict Tactics Scale total domestic violence (psychological and physical) perpetration. DES Absorp. = Dissociative Experiences Scale Absorption/Imaginative involvement. DES Depers. = Dissociative Experiences Scale Depersonalization/Derealization. CREQ-P = COVID-Related Experience Questionnaire–Pregnancy version. RFQ-T = Trauma-Specific Reflective Functioning Scale.

<sup>a</sup> Higher scores denote healthier functioning. For all other variables, higher scores denote more pathological functioning.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

## PERSONALITY PATHOLOGY IN PREGNANT WOMEN

**Table 4**

*Mediation Analysis Testing the Direct and Indirect (through Mentalization of Trauma) Effects of Level of Personality Pathology on Internalizing Pathology, Domestic Violence Perpetration, and Dissociation*

Variable with Direct (D), Total (T), and Indirect Effects	Effect <sup>a</sup>	SE	<i>t</i>	LLCI	ULCI
<b>Internalizing (<i>n</i> = 998; <math>R^2 = .30</math>)</b>					
<i>a</i> path SIFS → RFQ-T	4.67	.18	23.56	4.29	5.07
<i>b</i> path RFQ-T → Internalizing	.07	.01	7.04	.05	.09
<i>c'</i> path SIFS → Internalizing (D)	.96	.08	12.61	.81	1.11
<i>c</i> path SIFS → Internalizing (T)	1.29	.06	20.49	1.16	1.41
Bootstrap for Indirect <i>ab</i> Effect	.32	.05		.22	.43
<b>DVP (<i>n</i> = 1026; <math>R^2 = .12</math>)</b>					
<i>a</i> path SIFS → RFQ-T	4.24	.20	20.72	3.84	4.64
<i>b</i> path RFQ-T → DVP	.25	.05	5.30	.16	.34
<i>c'</i> path SIFS → DVP (D)	2.08	.37	5.67	1.36	2.79
<i>c</i> path SIFS → DVP (T)	3.13	.31	10.06	2.52	3.74
Bootstrap for Indirect <i>ab</i> Effect	1.06	.27		.56	1.63
<b>DES Total (<i>n</i> = 1136; <math>R^2 = .22</math>)</b>					
<i>a</i> path SIFS → RFQ-T	4.63	.19	24.50	4.26	5.00

## PERSONALITY PATHOLOGY IN PREGNANT WOMEN

<i>b</i> path RFQ-T → DES	.09	.01	8.84	.07	.11
<i>c'</i> path SIFS → DES (D)	.79	.08	10.02	.63	.94
<i>c</i> path SIFS → DES (T)	1.19	.07	18.22	1.07	1.33
Bootstrap for Indirect <i>ab</i> Effect	.41	.06		.30	.53

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*Note.* SIFS = Self and Interpersonal Functioning Scale. RFQ-T = Trauma-Specific Reflective Functioning Scale. Internalizing = internalizing factor generated through Principal Components Analysis on items from the Kessler Psychological Distress Scale, the Positive and Negative Affect Schedule Negative Affect scale, the Edinburgh Perinatal/Postnatal Depression Scale, and the Posttraumatic Stress Disorder Checklist for DSM-5. DVP = Total domestic violence (psychological and physical) perpetration. DES Total = Dissociative Experiences Scale total score. LLCI = lower limit confidence interval 95%; ULCI = upper limit confidence interval 95% (bias-corrected bootstrap confidence intervals). Bootstrap sample size = 5000. Variable *ns* due to missing data. <sup>a</sup> Unstandardized regression coefficient. All *ps* < .0001.